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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/391,399	09/08/99	YAMAGATA	H 3553-2

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EXAMINER	
FETZNER, T	
ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 02/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/391,399

Applicant(s)
Hltoshi Yamagata

Examiner
Tiffany A. F tzner

Group Art Unit
2862



☒ Responsive to communication(s) filed on Sep 8, 1999

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-7 is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-7 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on Sep 8, 1999 is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
☒ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 5

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

- A) In **Figure 1** Reference Numbers 1a, 1b, 12, and C are missing from the description.
- B) In **Figure 2** Reference Numbers 12, is missing from the description.
- C) In **Figure 3** Reference Numbers 12, is missing from the description.
- D) In **Figure 6A** Reference Numbers 12, is missing from the description.
- E) In **Figure 6B** Reference Numbers 12, is missing from the description.
- F) In **Figure 12** Reference Numbers 12, is missing from the description.
- G) In **Figure 13** Reference Numbers 12, is missing from the description.
- H) In **Figure 14A** Reference Numbers 12, is missing from the description.
- I) In **Figure 14B** Reference Numbers 12, is missing from the description.
- J) In **Figure 15** Reference Numbers 55C, 55D, and 65 are missing from the description.

Correction is required.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "6" and "2" have both been used to designate a "tabletop" [See page 11 lines 4 and 5]. Correction is required.

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4. Applicant is required to submit a proposed drawing correction in response to this Office Action. Any proposal by the applicant for amendment of the drawings to cure defects **must consist of two parts:**

- A. A separate letter to the Draftsman in accordance with M.P.E.P. (608.02(r)); and
- B. A print or pen-and-ink sketch showing changes in red ink in accordance with M.P.E.P. (608.02(v)).

IMPORTANT NOTE: The filing of new formal drawings to correct the noted defect may be deferred until the application is allowed by the examiner, but the print or pen-and-ink sketch with proposed corrections shown in red ink is required in response to this Office Action, and *may not be deferred*.

5. ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claims 1, 3-5** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Kaufman** US patent 4,829,252 issued May 9th 1989; in view of **Takekoshi et al.**, US patent 6,049,208 issued April 11th 2000 filed November 17th 1995.

9. With respect to **Claim 1**, **Kaufman teaches** “A magnetic resonance imaging apparatus comprising: **a static magnetic field generator** for generating a static field” [See Fig. 4 magnetic field producing assemblies 100, and permanent magnets 102; text col. 2 lines 51-64, col. 3 lines 54-60, col. 4 lines 3-29] “**a gradient magnetic field generator** for generating a gradient magnetic field that is superimposed on the static magnetic field” [See col. 1 lines 13-23 which teaches/suggests that gradients are controlled and superimposed on the static magnetic field; col. 2 lines 55-59; col. 4 lines 21-29; where gradient coils which generate gradient magnetic fields are taught.] “**a radio-frequency magnetic field pulse transmitting/receiving unit**, which applies a radio-frequency pulse to a region of interest of a patient that is located within the static magnetic field, and which also receives a magnetic resonance signal that is generated from the patient” [See col. 1 lines 24-29 col. 4 lines 25-29; RF coil structures 600, 601]; **Kaufman** also teaches “**a patient couch**, (i.e. a suitable transport structure 500; shown in Figure 6, and Figure 8) which enables movement of the patient”.

10. **Kaufman** lacks teaching, “a position information establishing apparatus which establishes position information of the region of interest of the patient; and **a patient couch controller** for moving the patient couch, based on the region of interest position information, so that the region

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of interest is positioned either at the center of the static magnetic field, or at the center of the gradient magnetic field.” However, **Takekoshi et al.**, teaches “a position information establishing apparatus [See Figures 7 and 9 components ,72, 74, 75 text col. 4 lines 52-65] “which establishes position information of the region of interest of the patient” [See col. 6 lines 10-30]; **Takekoshi et al.**, also teaches “a **patient couch controller** for moving the patient couch, based on the region of interest position information,” [See Figure 11, col. 7 line 48 through col. 8 line 24]. Further, **Takekoshi et al.**, teaches “the region of interest is positioned either at the center of the static magnetic field, or at the center of the gradient magnetic field” because **Takekoshi et al.**, teaches that the center or axis of the lower body coincides with the center of the measurement space and it is preferred that the patient to be examined should be disposed on this center.” [See Figure 1 component 41, col. 6 lines 10-30].

11. It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that the references of **Kaufman** and **Takekoshi et al.**, can be combined because both apparatuses concern open magnetic resonance imaging devices, where a patient is transported into the apparatus.

12. With respect to **Claim 3**, **Kaufman** lacks teaching; “the position information establishing apparatus comprises a position detection apparatus that detects the position of the region of interest.” However, **Takekoshi et al.**, teaches this limitation. [See col. 6 lines 10-30, where the light markers indicate the center of the reference position.] The same reasons for rejection, and motivation to combine that apply to **claim 1** also apply to **claim 3**.

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13. With respect to **Claim 4**, **Kaufman** lacks teaching; “the patient couch controller performs approximate positioning of the patient couch, based on a signal from the position detection apparatus.” However, **Takekoshi et al.**, teaches this limitation. [See Figure 11, text col. 7 line 48 through col. 8 line 24.] The same reasons for rejection, and motivation to combine that apply to **claims 1, 3** also apply to **claim 4**.

14. With respect to **Claim 5**, **Kaufman** lacks teaching; “the patient couch is capable of moving the patient in the horizontal and vertical directions.” However, **Takekoshi et al.**, teaches this limitation. [See col. 5 line 25 through col. 6 line 9; col. 6 line 31 through col. 8 line 24; Figure 4, specifically, components L1, L2, L3 in relation to the teaching of the text and that the patient bed can “UP” or “DOWN” (i.e. col. 7 lines 48-67) as well as into and out of the magnet. (I.e. col. 3 lines 6-33)] The same reasons for rejection, and motivation to combine that apply to **claim 1** also apply to **claim 5**.

15. **Claims 2, 6, and 7** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Kaufman** US patent 4,829,252 issued May 9th 1989; in view of **Takekoshi et al.**, US patent 6,049,208 issued April 11th 2000 filed November 17th 1995; in further view of **Kan et al.**, US patent 6,094,590 issued July 25th 2000 filed September 18th 1997.

16. With respect to **Claim 2**, **Kaufman** and **Takekoshi et al.**, both lack teaching; “the position information establishing apparatus comprises an input apparatus that inputs position information, based on an image of the patient that is obtained from the magnetic resonance signal.” However, both the **Kaufman** and **Takekoshi et al.**, apparatuses are capable of producing MRI images, and it is well established that if the patient is properly aligned within the MRI device

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that the region of interest, will be in the center of the MRI image. Therefore, It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that if in the course of operating the device, the area of interest was not centered, or if the resolution diminished due to patient movement beyond the homogeneous imaging region, then one of ordinary skill in the art, would be aware that the patient had moved, (i.e. the position of the patient had changed.) Further, it is well known to use an MR signal to determine the position of the patient, and instruments in real time. [See **Kan et al.**, col. 3 lines 40-54] Therefore, It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that using an MR image from either of the **Kaufman** and **Takekoshi et al.**, apparatuses is a readily obvious variation of what **Kaufman** and **Takekoshi et al.**, teach, and the examiner considers it to fall within the scope of both inventions. Additionally, **Kan et al.**, is an example of surgical MRI, where the limitation of inputting "position information, based on an image of the patient that is obtained from the magnetic resonance signal" is necessarily critical, so the limitation itself lacks novelty.

17. It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that the references of **Kaufman**, **Takekoshi et al.**, and **Kan et al.**, can be combined because each apparatus concerns open magnetic resonance imaging devices, where a patient is transported into the apparatus.

18. With respect to **Claim 6**, This claim is just the method version of apparatus **claims 1-5**. Additionally, it is well known that if one MR image can be used to determine the position of a region of interest that a plurality of images can also be used. Further it is well-established that in

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the art of MRI / NMR that “the region of interest of the patient ideally coincides precisely with the center of the static magnetic field or the center of the gradient magnetic field” because this is the location where the strongest signals, and highest image resolution may be obtained, therefore selecting this ideal location lacks novelty. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1-5** also apply to **claim 6**.

19. With respect to **Claim 7**, **Kaufman** lacks teaching; “the step of selecting an image further comprises a step of selecting a region of interest within the selected image.” However, “selecting a region of interest within a selected image” is a standard MR practice that all MR operators use to obtain the clearest image of the area that the patient’s doctor requests. Therefore, the limitation is considered inherent to the **Kaufman** reference. **Takekoshi et al.**, also teaches/suggests this, [See col. 6 lines 10-30] by placing the area of the patient to be imaged in the center of the imaging area/volume, since one or more images are known to be useful for referencing an area prior to a full MR scan. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1-6** also apply to **claim 7**.

20. Prior Art made of Record

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- A) US patent 5,735,278 issued to **Hoult et al.**, April 7th 1998 and filed March 15th 1996.
- B) US patent 4,968,937 issued to **Akgun** November 6th 1990.

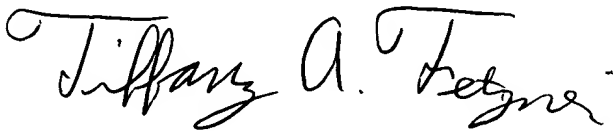
Conclusion

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22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is (703) 305-0430. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.


23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christine Oda, can be reached on (703) 305-4908. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3432 .

24. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.



TAF

February 6, 2001



JAY PATIDAR
PRIMARY EXAMINER